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10/070,450	03/20/2002	Hermann Putter	220803US0PCT	7560

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EXAMINER

WONG, EDNA

ART UNIT PAPER NUMBER

1753

DATE MAILED: 05/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/070,450

Applicant(s)

PUTTER ET AL.

Examiner

Edna Wong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 10-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Specification***

The disclosure is objected to because of the following informalities:

page 7, line 23, it is unclear what is meant by "meshes of felts".

Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

***Claim Rejections - 35 USC § 112***

I. Claims **15 and 20** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15

line 2, it appears that the graphite felt is the anode. However, it is unclear if it is. If not, then what is the relationship between the anode and the graphite felt?

II. Claims **10-20** are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the

steps. See MPEP § 2172.01. The omitted steps are the steps of the process.

Claim 10, lines 1-3, recites "wherein the organic compound is both oxidized and reduced at one electrode" in the body of the claim. This limitation is a result of the process and is not a process step. Therefore, the body of claim 10 is missing the process steps.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

I. Claims **10-11 and 13** are rejected under 35 U.S.C. 102(b) as being anticipated by **Chernyshev et al.** ("Mechanism of the Electrochemical Synthesis of Ferrocene", Inst. of Phys. Org. Chem., Acad. of Sci. of the Belorussian SSR, Minsk. Trans. from *Elektrokhimiya*, Vol. 18, No. 2, pp. 239-244, February, 1982, pp. 211-216).

Chernyshev teaches a process for the electrolytic transformation of at least one organic compound in an electrolysis cell, wherein the organic compound (= cyclopentadiene) is both oxidized and reduced at one electrode (= ferrocene on an iron anode) [page 211].

The organic compound is both oxidized and reduced at the anode (= iron anode) [page 211].

The anode is in contact with at least one hydrogenation catalyst (= iron) [page 211].

II. Claims **10 and 18** are rejected under 35 U.S.C. 102(b) as being anticipated by **Cleghorn et al.** ("Investigations of the Electrocatalytic Hydrogenation of Organic Molecules at Palladium on Nickel Cathodes", Electrochimica Acta, Vol. 38, No. 18, pp. 2683-2689, 1993).

Cleghorn teaches a process for the electrolytic transformation of at least one organic compound in an electrolysis cell, wherein the organic compound (= nitrobenzenes) is both oxidized and reduced at one electrode (= cathode) [page 2688, "3.3 Studies of electrocatalytic hydrogenation"].

The organic compound is both oxidized and reduced at the cathode (page 2688, "3.3 Studies of electrocatalytic hydrogenation").

III. Claims **10-14** are rejected under 35 U.S.C. 102(b) as being anticipated by **Oberrauch et al.** (US Patent No. 4,544,450).

Oberrauch teaches a process for the electrolytic transformation of at least one organic compound in an electrolysis cell, wherein the organic compound (= aromatic compound the core of which contains at least a methyl group) [col. 3, lines 9-12] is both oxidized and reduced at one electrode (= anode) [col. 1, lines 39-43].

The organic compound is both oxidized and reduced at the anode (col. 1, lines

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39-43).

The organic compound is reduced by hydrogenation (col. 1, lines 39-43)

The anode is in contact with at least one hydrogenation catalyst (col. 2, lines 55-58).

The hydrogenation catalyst is a noble metal (= Pd, Pt, Rh or Ru) [col. 2, lines 55-58].

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

I. Claims **15-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Chernyshev et al.** ("Mechanism of the Electrochemical Synthesis of Ferrocene", Inst. of Phys. Org. Chem., Acad. of Sci. of the Belorussian SSR, Minsk. Trans. from *Elektrokhimiya*, Vol. 18, No. 2, pp. 239-244, February, 1982, pp. 211-216) as applied to claims 10-11 and 13 above.

Chernyshev is as applied above and incorporated herein.

Chernyshev does not teach wherein the hydrogenation catalyst is applied to a graphite felt; wherein the hydrogenation catalyst is deposited on the anode from

suspension; and wherein the hydrogenation catalyst in the form of a suspension is brought into contact with the anode.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one skilled in the art would have been motivated to have modified the process of Chernyshev with wherein the hydrogenation catalyst is applied to a graphite felt; wherein the hydrogenation catalyst is deposited on the anode from suspension; and wherein the hydrogenation catalyst in the form of a suspension is brought into contact with the anode because no significance is seen whether the anode is made of the catalyst itself or contacted or supported on a carrier. It appears that these variations would have been functionally equivalent and are merely a matter of design choice because the designs solve no stated problems and produces no unexpected results, absent evidence to the contrary. *In re Kuhle* 188 USPQ 7 (CCPA 1975).

Furthermore, it does not appear that the Applicants have invented coating, contacting or suspending a catalyst layer on an electrode, unless proven otherwise.

II. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Cleghorn et al.** ("Investigations of the Electrocatalytic Hydrogenation of Organic Molecules at Palladium on Nickel Cathodes", Electrochimica Acta, Vol. 38, No. 18, pp. 2683-2689, 1993) as applied to claims 10 and 18 above.

Cleghorn is as applied above and incorporated herein.

Cleghorn does not teach wherein the electrode is a gas diffusion electrode.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one skilled in the art would have been motivated to have modified the process of Cleghorn with wherein the electrode is a gas diffusion electrode because the activity of the cathode would have to evolve hydrogen for the electrocatalytic hydrogenation.

Cleghorn teaches a Pd/graphite cathode (page 2688, "3.3 *Studies of electrocatalytic hydrogenation*").

**III.** Claims **15-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Oberrauch et al.** (US Patent No. 4,544,450) as applied to claims 10-14 above.

Oberrauch is as applied above and incorporated herein.

Oberrauch does not teach wherein the hydrogenation catalyst is applied to a graphite felt; wherein the hydrogenation catalyst is deposited on the anode from suspension; and wherein the hydrogenation catalyst in the form of a suspension is brought into contact with the anode.



However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one skilled in the art would have been motivated to have modified the process of Oberrauch with wherein the hydrogenation catalyst is applied to a graphite felt; wherein the hydrogenation catalyst is deposited on the anode from suspension; and wherein the hydrogenation catalyst in the form of a suspension is brought into contact with the anode because no significance is seen whether the anode is made of the catalyst itself or contacted or supported on a carrier. It appears that these variations would have been functionally equivalent and are merely a matter of design choice because the designs solve no stated problems and produces no unexpected results, absent evidence to the contrary. *In re Kuhle* 188 USPQ 7 (CCPA 1975).

Furthermore, Oberrauch teaches that the electrocatalytic cathode can be selected from among the usual cathode materials, such as metals, graphite, carbon, metal oxides appropriately *coated by catalytically active substances, or it can consist of the substance itself* which is catalytically active and the latter is selected, for example, from among Pd, Pt, Rh, Ru, as such, in admixture, supported or also in the form of their alloys; and the anode is selected, for example, from among graphite, carbon, lead, precious metals, *as such or properly supported* (col. 2, line 55 to col. 3, line 8).

### ***Allowable Subject Matter***

The following is a statement of reasons for the indication of allowable subject

matter:

Claim **20** defines over the prior art of record because the prior art does not teach or suggest the process as claimed in claim 10, wherein the organic compound is furan or a furan derivative or furan and a furan derivative.

The prior art does not contain any language that teaches or suggests the above. Therefore, a person skilled in the art would not have been motivated to adopt the above conditions, and a prima facie case of obviousness cannot be established.

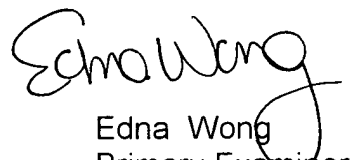
Claim 20 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (703) 308-3818. The examiner can normally be reached on Mon-Fri 7:30 am to 5:00 pm, alt. Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 873-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-

1495.

  
Edna Wong  
Primary Examiner  
Art Unit 1753

EW  
May 8, 2003